



Subsea Engineering Competency Profile



SURVEY, GEOPHYSICAL & GEOTECHNICAL ENGINEERING FUNDAMENTALS	GTP-001
<p>This competency demonstrates a Subsea Engineer to have an overview of offshore geophysical survey, geotechnical investigation and geotechnical engineering so that they are equipped to work with these disciplines and interfacing parties.</p>	

ELEMENT OF COMPETENCE	WHAT THIS COMPETENCE MEANS IN PRACTICE	INDICATORS OF ATTAINMENT
		Refer to only as many Indicators of Attainment as you need to demonstrate the Element of Competence
Knowledge of Codes and Standards relevant to subsea geotechnical engineering.	Capable of using recognised codes and standards as they apply to subsea geotechnical engineering.	Can cite examples of where the engineer has competently used codes and standards within a project.
Knowledge of data gathering requirements as they apply to projects, the various phases of projects and the tools required. This includes requirements for geophysical surveys, geotechnical site investigations and laboratory testing.	Capable of preparing specifications/scope of work for gathering of site data relevant to design of subsea infrastructure.	Can cite examples of where specification of data gathering scopes has been carried out within a project and/or oversees execution of such scopes. Has participated in geodata collection including field processing.
Awareness of regional geology and its engineering implications	Capable of prediction of potential seafloor conditions prior to survey to optimise data acquisition techniques.	Can cite examples of various regional seafloor conditions.
Awareness of geodesy including Geodetic Datums and Projections. Awareness of tidal datums.	Capable of recognising appropriate geodetic datums and/or projection zones across a project.	Has worked with at least two reference systems on at least two projects.
Awareness of geotechnical design requirements for various types of shallow and deep foundations and anchoring systems (including piles, mud mats, suction caissons, drag anchors, etc) for structures and pipelines and interpretation of data in order to obtain required parameters.	Understands the implications of seabed interactions for a range of different subsea facilities.	Can demonstrate understanding of design process via project examples including structures, flowlines, pipelines, risers, moorings, jumpers and spools.



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Awareness of design process and design issues for various foundation/anchor types for pipelines and knowledge of loading conditions to be considered for the life of the project.	Capable of the geotechnical design of subsea foundations/anchors and/or pipelines and interacting with other relevant disciplines for holistic view of subsea system.	Can cite examples of where geotechnical design has been carried out successfully within projects and demonstrate examples of interaction with other engineering disciplines to achieve this outcome.
Awareness of geohazards and potential to impact on subsea facilities design and operation including spatial and vertical sediment variations, shallow gas, turbidity/debris flows, unexploded ordnance and seabed sediment mobility/scour.	Capable of understanding the impacts of geohazard risk on the design or operation of subsea facilities.	Has participated in an evaluation of geohazard risks for a subsea development.
Awareness of installation and lifetime monitoring requirements for the various foundation/anchoring options	Is capable of understanding key installation and lifetime monitoring methods.	Has participated in a number of constructability and operational survey engineering activities
Knowledge of the role of geotechnical engineers at each phase including: <ul style="list-style-type: none"> ● Concept development ● Subsea infrastructure design; ● Construction and installation; ● Operations and integrity management; and ● Decommissioning / abandonment. 	Capable of working as part of a multi-discipline engineering team including geo-engineering elements.	Can cite examples of where the engineer has worked with geo-engineering disciplines within a project to deliver a successful outcome. Has demonstrable project experience in at least three of the lifecycle phases of a subsea system.